

1. INTRODUCTION

A. PURPOSE

This Water System Capital Improvement Plan report has been prepared to provide the City of Bloomington Utilities (CBU) with a long-range plan for improving and expanding its water treatment facilities and distribution system. The Plan recommendations provide a basis for the design, construction, and financing of the improvements needed to meet CBU's anticipated growth. The recommended improvements will be required at various stages during the study period to provide an adequate and dependable supply of water to existing and future customers. The recommendations in this Plan do not promote or encourage growth but are required to ensure that the City of Bloomington Utilities can provide an adequate supply of water and keep pace with projected growth in the City and County.

B. SCOPE

The Study Area covered by this Capital Improvement Plan includes the City of Bloomington and Monroe County, Indiana, as shown on Figure 1-1. The study period is from year 2000 through 2030. Existing and projected populations, historical water production, and metered water sales were used to estimate water use for the base year 2000 and projected for the design years 2010, 2020, and 2030. The water treatment facilities and the distribution system improvements recommended in this Capital Improvement Plan are staged to correct existing system deficiencies and to coincide with anticipated development. Opinions of probable construction costs, probable project costs, and rate impacts also are included.

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Figure 1-1

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The principal elements of study included the following:

- An evaluation of historical trends in population growth and water use.
- A projection of future population and water requirements.
- A description of existing water treatment, transmission, and distribution system facilities.
- An update of the existing WaterCAD hydraulic model to reflect existing and future conditions.
- System analyses with the model to determine the ability of CBU's water treatment facilities and distribution system to hydraulically satisfy present and future water requirements.
- The development of a long-range capital improvement plan of recommended system improvements including a construction program and opinions of probable cost.
- An analysis of the impact to water rates associated with construction of the recommended improvements.

C. ABBREVIATIONS

Abbreviations used in this report are as follows:

ACOE	Army Corp of Engineers
AD	Average day
CBU	City of Bloomington Utilities
CT	Concentration and Time
DBP	Disinfection By-Products

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DBPR	Disinfection By-Products Rule
EPA	Environmental Protection Agency
ft	Feet
gpcd	Gallons per capita per day
gpm	Gallons per minute
gpd	Gallons per day
HAA5	Haloacetic Acid (5 specific)
HGL	Hydraulic Grade Line
hp	Horsepower
IBRC	Indiana Business Research Center
ICI	Industrial/Commercial/Institutional
ICR	Information Collection Rule
IDEM	Indiana Department of Environmental Management
IDNR	Indiana Department of Natural Resources
IESWTR	Interim Enhanced Surface Water Treatment Rule
in	Inch
ISO	Insurance Services Office
LT1ESWTR	Long Term 1 Enhanced Surface Water Treatment Rule
LT2ESWTR	Long Term 2 Enhanced Surface Water Treatment Rule
MCL	Maximum Contaminant Level
MD	Maximum Day
MG	Million Gallons
mgd	Million gallons per day
MH	Maximum Hour
msl	Mean sea level
MRDL	Maximum Residual Disinfectant Level
PS	Pump Station
psi	Pounds per square inch
rpm	Revolutions per minute
SDWA	Safe Drinking Water Act
SWTR	Surface Water Treatment Rule
TOC	Total Organic Carbon

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TTHM	Total Trihalomethane
USGS	United States Geological Survey
UV	Ultraviolet
WTP	Water Treatment Plant
WWTP	Wastewater Treatment Plant

D. BACKGROUND MATERIAL

Background reference material for this Capital Improvement Plan includes the following:

- 1986, Water Supply Treatment and Distribution for Bloomington, Indiana, Black & Veatch.
- 1991, City of Bloomington, Growth Policies Plan, 1st Draft.
- 1993, City of Bloomington Utilities Water Facilities Capital Improvement Program Assessment, Black & Veatch, Cincinnati, Ohio.
- 1996, Monroe County Comprehensive Land Use Plan.
- 1997, Insurance Services Office, Inc (ISO) Report.
- 1999, City of Bloomington Utilities Water System Improvements, Drinking Water State Revolving Fund Preliminary Engineering Report, Black & Veatch, Cincinnati, Ohio.
- 2000, New Water Treatment Plant Siting Study, Black & Veatch, Cincinnati, Ohio.
- 2000 Census, U.S. Census Bureau.

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- 2001, City of Bloomington Utilities, SDWA Regulatory Compliance Review, Black & Veatch, Cincinnati, Ohio.
- 2002, City of Bloomington, Growth Policies Plan, 4th Draft.
- 2002, City of Bloomington Utilities, Power Point presentation of the Utilities' Water History.
- 2002, City of Bloomington Utilities, Water Treatment Plant Membrane Filtration Pilot Study, Black & Veatch, Cincinnati, Ohio.
- 2002, City of Bloomington Utilities, Monroe Water Treatment Plant Improvements Design Report, Black & Veatch, Cincinnati, Ohio.
- 2002, City of Bloomington Utilities, Preliminary System Improvements Study, Groundwater Feasibility Study, HNTB, Indianapolis, Indiana.

E. HISTORY OF BLOOMINGTON'S WATER SUPPLY AND TREATMENT

Throughout its existence, Bloomington has experienced water shortages caused by weather conditions, lack of natural water supplies, and water storage imbalances. It also has an excellent record of achievements in providing safe water to its customers. As in the past, the importance of making today's timely decisions will only be verified by the future. This Capital Improvement Plan will provide CBU with options to maintain a safe and reliable drinking water well into the future. Future water supply, usage, and development are, and should be, a concern to every water utility. This concern applies to both quantity and quality. As Bloomington has experienced, without properly developing and managing the water supply and treatment facilities, shortages can and will occur.

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A timeline of Bloomington's most significant water achievements follows:

- 1818 Monroe County founded
- 1860 Cisterns built on Courthouse Square and contaminated by human and animal wastes.
- 1885 Courthouse well drilled 2,670 feet – dry
- 1891 Water Franchise established
- 1892 Upper Twin Lake built
- 1893 Twin Lakes WTP constructed
- 1894 Twin Lakes WTP placed on line
- 1898 Plant sold to City
- 1899 Plant shut down due to lack of water
- 1902 Plant shut down due to lack of water
- 1905 Lower Twin Lake built
- 1909 Weimer (Wapehani) Lake built
- 1911 University Lake built
- 1915 Leonard Springs Lake built
- 1922 Plant shut down three days per week due to lack of water
- 1924 Private water company formed
- 1925 Griffy Lake built and Griffy WTP begins operation
- 1939 City buys back water company
- 1953 Lake Lemon built
- 1954 Griffy WTP expanded
- 1965 Lake Monroe built
- 1967 Monroe WTP placed on line
- 1990 Monroe WTP expanded
- 1996 Griffy WTP retired